

Attorney's Docket No. 9278.01

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Transmitted herewith for filing is the utility patent
application of: **WESLEY STOUT III**

For: **DATE FORMATTING SYSTEM**

Enclosed Are:

1. Patent Application, 14 sheets
2. 3 sheets of Formal Drawings Containing 6 figures
3. Combined Declaration and Power of Attorney, 2 sheets
4. Verified Statement Claiming Small Entity Status, 1 sheet
5. Petition To Make Special Because of Applicant's Age
6. Associate Power of Attorney, 1 sheet
7. Information Disclosure Statement
8. Form PTO-1449, with copies of 7 references
9. Filing Fee in the Amount of \$395.00

The filing fee has been calculated as shown below:

BASIC FEE	SMALL ENTITY	\$395.00
TOTAL CLAIMS	(4 - 20 = 0) x 11	0.00
IND. CLAIMS	(3 - 3 = 0) x 41	<u>0.00</u>
TOTAL		<u>\$395.00</u>

Additional fees due, if any, may be charged to Deposit Account
No. 12-1662 of the undersigned.

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Docket No. 9278.01

IN THE APPLICATION

OF

WESLEY STOUT III

FOR A

DATE FORMATTING SYSTEM

REGISTRATION STATE OF VIRGINIA
REGISTRATION NUMBER 9278.01

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DATE FORMATTING SYSTEM

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention relates to a method for operating a computer system to perform date operations, and more particularly, to a method for operating a computer system to accurately perform date operations spanning centuries.

2. DESCRIPTION OF THE RELATED ART

Most existing computer application software treats a date in a format similar to "MM/DD/YY" or "YY/DDD," using 2 digits of a 4 digit year number, resulting in 2 digit year numbers. For example, the year 1998 is input, stored, processed and displayed as "98". However, starting at the year 2000, this treatment will cause problems because "00" could be interpreted as either "1900" or "2000," and, for example, the length of a period from 1998 to 2000 could be negative if 98 is subtracted from 2000. This problem is known as the "Year 2000 (Y2K) Problem" in the industry, and has been considered a crisis.

Several inventions attempt to solve the Y2K problem by providing complex and expensive computer programs. A discussion of related, representative art follows.

One such invention is described in U.S. Patent No. 5,289,393 which issued to S. Kaya on Feb. 22, 1994. This invention is a portable electronic apparatus having a calendar feature which stores the year in 4 digits.

5 U.S. Patent No. 5,600,836 which issued to H. Alter on Feb. 4, 1997, discloses a system and method for processing date-dependent information which spans one or two centuries. The invention includes time change interfaces that convert date data from local time to zone time so that all of the dates are in one century, as 10 well as a method of converting from zone time back to local time.

U.S. Patent No. 5,630,118 which issued to D.P. Shaughnessy on May 13, 1997, discloses a system and method for modifying and operating a computer system to perform date operations on date fields spanning centuries. The system comprises a subroutine that 15 determines which dates within the program correspond to specified date criteria and performs a date operation on the date field.

U.S. Patent No. 5,644,762 which issued to T.B. Soeder on May 14, 1996, discloses a method and apparatus for recording and reading date data having coexisting formats. The invention uses a 20 system whereby years past 1999 are stored as binary integers in fields previously reserved for representations of years as two decimal digits, so that the last two decimal digits will be able to coexist for at least ten thousand years.

U.S. Patent No. 5,668,989 which issued to D. Mao on Sep. 16, 25 1997, discloses a system employing two-digit hybrid radix year numbers for the year 2000 and beyond. This system treats the

higher digit as hexadecimal, but displays the digit in a decimal-like style, while the lower digit is treated as ordinary decimal, so that the year 1900 is represented by 00 and the year 2000 is represented as '00.

5 British Patent No. 2,312,536 which was published on Oct. 29, 1997 and issued to Anderson et al., discloses a method and apparatus for identifying and correcting date errors. The invention consists of a suite of computer programs used together to detect and correct year 2000 problems in a personal computer. One 10 aspect of the invention involves the correcting the century value of the date operations a computer when the computer rolls over to the year 2000.

Lastly, *The Year 2000 and 2-Digit Dates: A Guide for Planning and Implementation*, 3d ed., published by IBM in May, 1996, 15 discloses three solutions and techniques for solving "Y2K" problems. The first technique involves conversion to full 4-digit year formats (DDDD) from 2-digit year (DD) formats, the second technique involves windowing techniques, namely, externalizing 2-digit or 4-digit year formats, and the third technique involves 20 using a 2-digit encoding/compression scheme, whereby 4-digit year data are compressed into 2-digit existing space.

None of the above inventions and patents, taken either singularly or in combination, is seen to describe the instant invention as claimed. Thus, a date formatting system solving the 25 aforementioned problems is desired.

SUMMARY OF THE INVENTION

The present invention provides a method which can be incorporated into the application processing logic of a computer program whose date operations would otherwise fail as a result of date operations utilizing 2-digit representation for the year. For example, the 2-digit code "00" could be representative of either the year 1900 or the year 2000.

According to a first embodiment of the invention, a 6-integer file system in CYYDDD format is used, "C" being a variable indicating the century. A second embodiment utilizes a 7-digit integer data file and is in YYYYDDD format. These two embodiments help avoid "year 2000" problems by using a year format in excess of 2-digits.

Accordingly, it is a principal object of the invention to provide a date formatting system that enables computer programs to avoid the "year 2000" crisis.

It is another object of the invention to provide a date formatting system that is easy to use in conjunction with a computer program.

It is an object of the invention to provide improved elements and arrangements thereof for the purposes described which is inexpensive, dependable and fully effective in accomplishing its intended purposes.

These and other objects of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a schematic block diagram of a computer system that may be used to practice the date formatting system according to the present invention.

Fig. 2 is a diagram of a sample data file of the prior art.

10 Fig. 3 is a diagram of a sample data file of the first embodiment of the invention.

Fig. 4 is a data conversion chart used to practice the present invention

Fig. 5 is a flowchart illustrating the steps the date formatting system takes when adding days of the year.

15 Fig. 6 is a diagram of a sample data file of the second embodiment of the invention.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

20 Referring to the drawings wherein like numerals represent like elements, **Fig 1.** illustrates an exemplary computer system 10 that may include the date formatting system of the present invention.

The computer system 10 has an input device 12, a CPU (central processing unit) 14, a memory device 16 and a display device 18. The operation of the computer system 10 is governed by a computer software program that is stored in the memory device 16.

5 A typical software program has numerous routines that perform the tasks that the program was designed to perform, such as alphabetize, sort or otherwise move text. More often than not, such programs additionally include a routine such as a date operation such as a date comparison.

10 The date operations often encoded in such software programs use a two-digit representation for the year. In such a case, the date operations may be erroneously performed when processing dates after December 31, 1999 for the reasons discussed above. **Fig. 2** shows prior art data files 20 utilizing such a two-digit representation for the year 21, each data file having 6 integers. 15 For illustrative purposes, December 25, 1998 and December 25, 2000 are shown in MMDDYY format, a two year difference existing between these two dates. When December 25, 2000 is subtracted from December 25, 1998, a 98-year difference is shown, clearly an error 20 associated with the Y2K problem.

Referring now to **Figs. 3-4**, the date formatting system according to the first embodiment of the present invention is shown. The first embodiment also utilizes a 6-integer file system 22, as shown in **Fig. 3**, so that the system takes up no more memory 25 than systems of the prior art. However, rather than storing date

data in MMDDYY format, the first embodiment stores it in CYYDDD format, "C" indicating the century 23.

For example December 25, 1998 would be shown as 298359, as shown in **Fig. 4.**, "2" indicating the 20th century, "98" indicating the year, and "359" indicating the 359th day of the year.

Therefore, when December 25, 1998, or 298359 is subtracted from December 25, 2000, or 300359, a difference of two years is shown, or 002000, indicating two years, zero days. Similarly, subtracting June 1, 1998, or 298152, from July 17, 2007, or 307198 results in the difference of 009046, or nine years and 46 days.

Adding days to these six-integer files will similarly avoid any Y2K problems. For, example to determine the date 2 years and 200 days from January 1, 1999, simply add 002200 + 299001, which is equal to 301201 or July 20, 2001.

Referring now to **Fig. 5**, the procedure performed when adding days to a certain date is illustrated. For example processing the date March 30, 1999, is shown at step **S1**. At step **S2**, the computer would then add days to this date. For example, adding four years 300 days March 31, 1999, which in CYYDDD format is 004300 + 299090.

The result yielded is 303390. In step **S3** the system determines whether the last three integers in the file, or the DDD portion is in excess of 365, or 366 in the event of a leap year. In such a case, the system adds 635 to this number, as shown in step **S4**. This would change the result 303390 to 304025, or January 25, 2004.

Should the DDD portion be less than 365, or 366 in the event of a

leap year, then the system returns to date processing, as shown in step **S5**.

Referring now to **Fig. 6**, a second embodiment of the date formatting system is shown. The first embodiment utilizes a 6-integer data file **22**, shown in **Fig. 3**, and is in CYYDDD format with the first integer functioning as a century variable **23**. The second embodiment utilizes a 7-digit integer data file **24** and is in YYYYDDD format. While the second embodiment uses a slightly larger data file **22** than the 6-digit integer data file of the first embodiment, the second embodiment relies on a simpler date operation process, as there is no "C" variable.

As shown in **Fig. 6**, May 2, 1998 is shown in YYYYDDD format, or 2000122, and February 3, 2000 is shown as 1998034. Subtracting 1998034 from 2000122 yields 0002088, or 2 years, 88 days. In the event that the DDD format is greater than 365, or 366 in the event of a leap year, a procedure similar to that in **Fig. 5** is utilized.

It is to be understood that the present invention is not limited to the embodiments described above, but encompasses any and all embodiments within the scope of the following claims.

CLAIMS

I claim:

1. A date formatting system comprising:
 - a computer readable memory storage medium, said medium storing a plurality of date files, each said date file having 6 integers and comprising:
 - a 4 digit decimal year represented in a first three integer form, the last two of said first three said integers representing the last two digits of the 4 digit decimal year, the first of said first three said integers representing a designated century; and
 - a 3 digit decimal day represented in a second three integer form, said second three integers representing a day of a year;
 - whereupon addition to or subtraction of at least two of said plurality of date files, the respective sums and differences can be computed and maintained after year 1999; and
 - a central processing unit for carrying out said addition and said subtraction operations.

2. The date formatting system of claim 1 wherein said first of said first three said integers representing a designated century are selected from the group ranging from 1 through 9, and wherein:

The integer 1 represents the 19th Century;
The integer 2 represents the 20th Century;
The integer 3 represents the 21st Century;
The integer 4 represents the 22nd Century;
The integer 5 represents the 23rd Century;
The integer 6 represents the 24th Century;
The integer 7 represents the 25th Century;
The integer 8 represents the 26th Century; and
The integer 9 represents the 27th Century.

3. A date formatting system comprising:

 a computer readable memory storage medium, said medium storing a plurality of date files, each said date file having 7 integers and comprising:

 a 4 digit decimal year represented in first four said integers; and

 a 3 digit decimal day represented in last three said integers, said second three integers representing a day of a year;

 whereupon addition to or subtraction of at least two of said plurality of date files, the respective sums and differences can be computed and maintained after year 1999; and

 a central processing unit for carrying out said addition and said subtraction operations.

4. A series of operational steps to be performed on or with the aid of a computer, said steps comprising:

providing a computer-readable storage medium storing a plurality of date files, each said date file having 6 integers and comprising:

a 4 digit decimal year represented in a first three integer form, the last two of said first three said integers representing the last two digits of the 4 digit decimal year, the first of said first three said integers representing a designated century; and

a 3 digit decimal day represented in a second three integer form, said second three integers representing a day of a year;

adding said integers of one of said plurality of files to another of said plurality of files to generate a sum, and optionally;

whenever necessary, adding 635 to said sum; and

providing a central processing unit to carry out said adding of said integers.

ABSTRACT OF THE DISCLOSURE

A date formatting system for a computer program to perform date operations where the dates span more than one century. In a first embodiment, a 6-integer file system in CYYDDD format is used, "C" being a variable indicating the century, YY indicating years, and DDD indicating days of the year. A second embodiment utilizes a 7-digit integer data file and is in YYYYDDD format. These two embodiments help avoid problems experienced by computer programs that use 2-digits to identify years.

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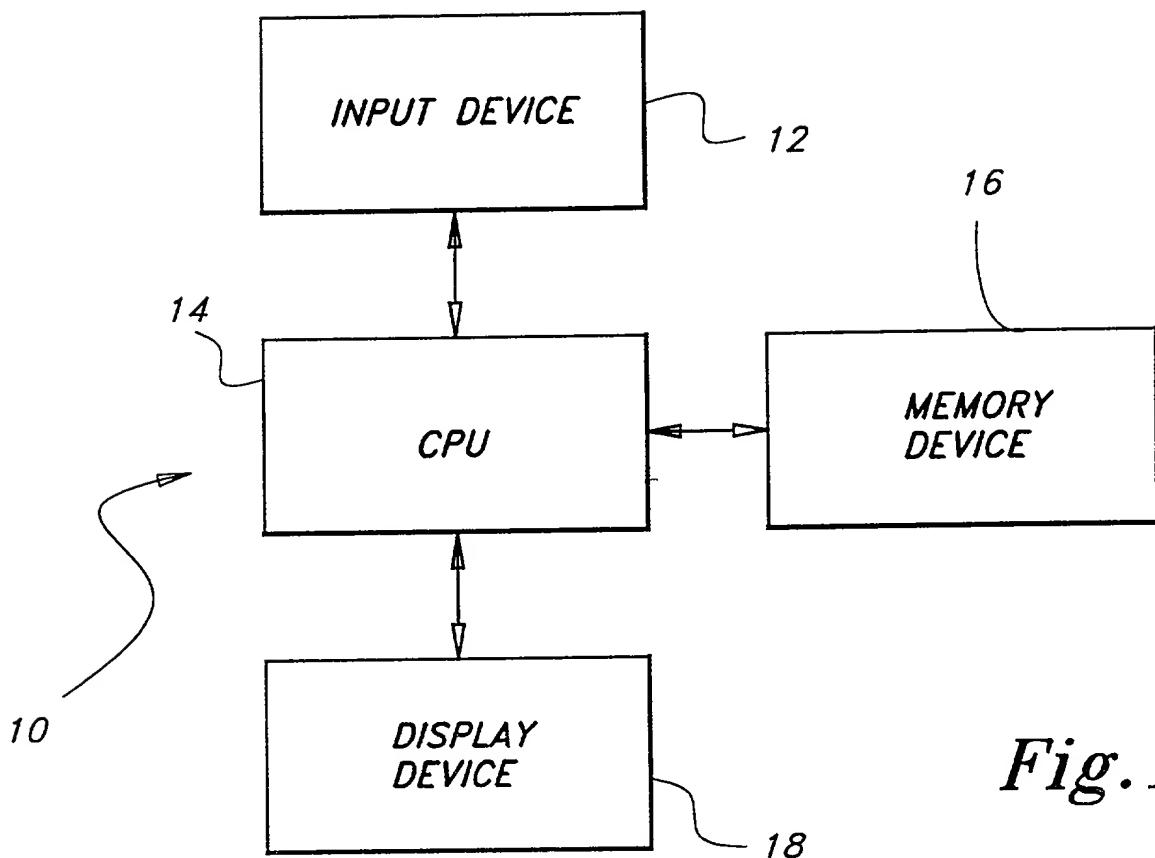
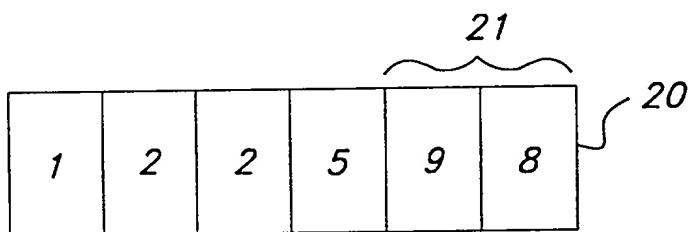


Fig. 1

DECEMBER 25, 1998



DECEMBER 25, 2000

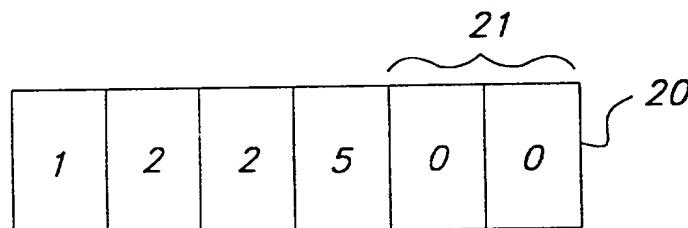
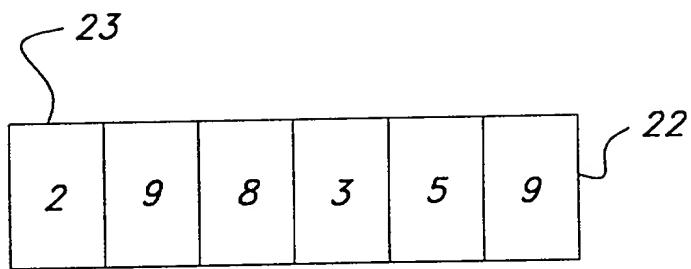


Fig. 2
(PRIOR ART)

DECEMBER 25, 1998



DECEMBER 25, 2000

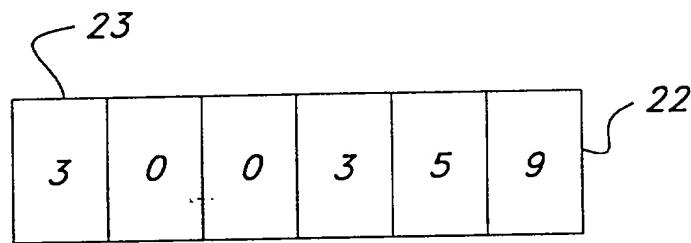


Fig.3

Digit 100-199 = 0000000000

VARIABLE "C"	YEAR
100-199	1800-1899
200-299	1900-1999
300-399	2000-2099
400-499	2100-2199
500-599	2200-2299
600-699	2300-2399

Fig.4

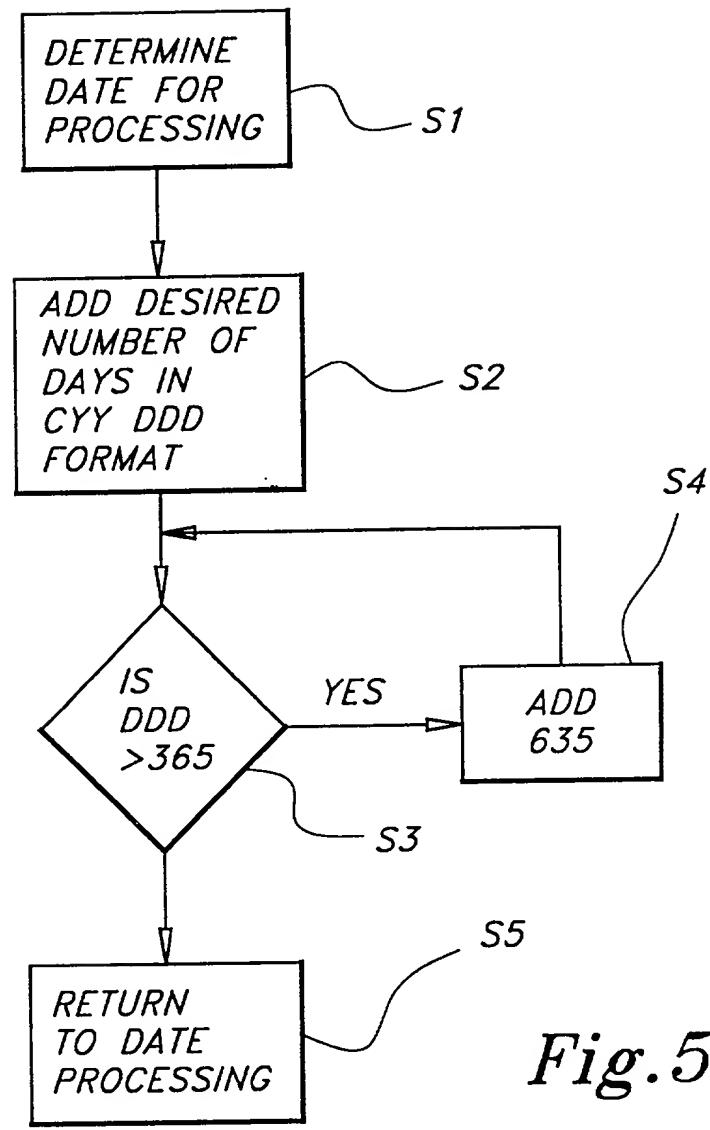


Fig.5

MAY 2, 2000

2	0	0	0	1	2	2
---	---	---	---	---	---	---

24

FEBRUARY 3, 1998

1	9	9	8	0	3	4
---	---	---	---	---	---	---

24

Fig.6

COMBINED DECLARATION AND POWER OF ATTORNEY

As the below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DATE FORMATTING SYSTEM

the specification of which is attached hereto unless the following box is checked:

was filed on _____ as United States Application Serial Number _____ or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificates, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

(Number)	(Country)	(Day/Month/Year Filed)	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	<input type="checkbox"/>

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below.

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Number)	(Filing Date)	(Status -- patented, pending, abandoned)
(Application Number)	(Filing Date)	(Status -- patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Richard C. Litman:	Registration No. 30,868
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Address all correspondence to:	Richard C. Litman LITMAN LAW OFFICES, LTD. P.O. Box 15035 Arlington, VA 22215

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor: WESLEY STOUT III

Signature: Wesley Stout III

Date: June 16- 1998 Country of Citizenship: U.S.A.

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Post Office Address: Same

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

APPLICANT : WESLEY STOUT III

SERIAL NO. : Unassigned

ART UNIT: Unassigned

FILED : Herewith

EXAMINER: Unassigned

FOR : DATE FORMATTING SYSTEM

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, DC 20231

Sir:

ASSOCIATE POWER OF ATTORNEY AND APPOINTMENT OF AGENTS
37 C.F.R. 1.34(b)

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The addresses and phone numbers of the above Attorneys and Agents are the same as that of the undersigned Principal Attorney.

All previous Associate Powers are hereby revoked.

Please address all correspondence in this application to the undersigned Principal Attorney.

Respectfully submitted,



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Attorney Docket No. 9278.01

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(b))--INDEPENDENT INVENTOR**

As the below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9 (c) for purposes of paying reduced fees under section 41 (a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled below and in:

TITLE OF INVENTION

DATE FORMATTING SYSTEM

the specification filed herewith.

I have not assigned, granted, conveyed, or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9 (c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

no such person, concern or organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small business entity is no longer appropriate. (37 CFR 1.28 (b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

WESLEY STOUT III
Name of First Inventor

Wesley Stout III
Signature of First Inventor

Date June 16 1998